1-1943

EC1723 Measuring Logs --- Piling and Seasoning Lumber

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E. C. 1723 Jan. 1943

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Nebraska's timber resources are limited, but there are many trees which can be cut annually. Lumber from cottonwood, elm, ash, oak, walnut, and yellow pine trees can be made to serve as a substitute for metal, as replacement for commercially-milled varieties needed for war industries, and to supply crate and box material for war supplies. In addition, home-grown products do not place any strain on already-crowded transportation systems. Use of such materials at this time is a patriotic duty.

THE UNIVERSITY OF NEBRASKA
COLLEGE OF AGRICULTURE—EXTENSION SERVICE
U. S. DEPARTMENT OF AGRICULTURE COOPERATING
W. H. BROKAW, DIRECTOR—LINCOLN, NEBRASKA

Measuring Logs-- Piling and Seasoning Lumber

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Measuring Logs

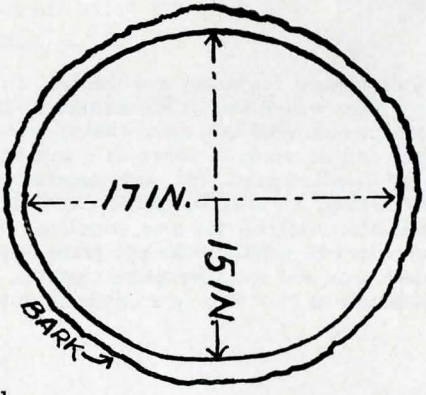
The number of board feet a log will yield is determined by its diameter in inches, its length in feet, and the extent to which it is free from defects.

Diameter

Log diameter refers to the diameter in inches of the smaller end inside the bark. The greater the diameter of the log, the larger is the proportion of it which can be made into lumber, since there is a smaller waste in squaring it in the milling process.

Diameters are considered to the nearest inch; that is, 14¼ inches would be computed as 14, and 14¾ as 15 inches. Half-inch measurements can be roughly divided between the adjacent higher or lower numbers by adopting the rule of adding one-half inch to all odd numbers and subtracting the same amount from all even numbers. Thus, a 15½-inch log would be computed at 16 inches and a 14½-inch one at 14 inches.

When the log is not round at the small end, the usual plan is to average the longest and shortest diameters taken at right-angles to each other as shown.



Length

Lumber is always cut to the whole foot, and usually to even foot lengths.

Log lengths should be measured carefully. An 8- or 10-foot stick accurately notched at one-foot intervals is a convenient measure for this purpose. A trimming allowance of 3 or 4 inches should be added to the normal length of the log so as to provide for squaring the lumber after it is sawed.

Defects

There are certain defects which may affect the net content of logs, such as rot, cracks, fire scars, wind shake, crookedness, and knots.

Board Foot Volume

The number of board feet that logs of various sizes will yield has been computed and is available in tabular form. These tables are called log rules. The one given in the middle of this circular is the International Rule which allows for ¼-inch saw kerf and, according to the U. S. Forest Service, gives log volumes that are close to what can be sawed out by good methods.

To find the volume of any log, move down the left-hand column in the log rule until the number is found which shows the small end diameter of the log. Then move to the right in the table until directly below the length which has been measured. The figure in this position is the log volume in board feet.

Figures are given in the table only for even length logs. If it is necessary to figure the volume of an odd length log such as one 11 feet long and 14 inches in diameter, the volume may be obtained by averaging

Even though the large log is less than twice as large in diameter as the log next to it, it contains four times the volume of the smaller log. (Courtesy of Purdue University, Agricultural Extension Service, LaFayette, Indiana.)

Diameter (small end of log, inside of bark) inches	Leng		
	8	10	12
	Volu		
8	15	20	25
9	20	30	35
10	30	35	45
11	35	45	55
12	45	55	70
13	55	70	85
14	65	80	100
15	75	95	115
16	85	110	130
17	95	125	150
18	110	140	170
19	125	155	190
20	135	175	210
21	155	195	235
22	170	215	260
23	185	235	285
24	205	255	310
25	220	280	340
26	240	305	370
27	260	330	400
28	280	365	430
29	305	385	465
30	325	410	495
31	350	440	530
32	375	470	570
33	400	500	605
34	425	535	645
35	450	565	685
36	475	600	725
37	505	635	770
38	535	670	810
39	565	710	855
40	595	750	900

AL LOG RULE

Log, Feet			
14	16	18	20
board feet			
35	40	45	50
45	50	60	70
55	65	75	85
70	80	95	105
85	95	110	125
100	115	135	150
115	135	155	175
135	160	180	205
155	180	205	235
180	205	235	265
200	230	265	300
225	260	300	335
250	290	330	370
280	320	365	410
305	355	405	455
335	390	445	495
370	425	485	545
400	460	525	590
435	500	570	640
470	540	615	690
505	585	665	745
545	630	715	800
585	675	765	855
625	720	820	915
670	770	875	980
715	820	930	1045
760	870	990	1110
805	925	1050	1175
855	980	1115	1245
905	1040	1175	1315
955	1095	1245	1390
1005	1155	1310	1465
1060	1220	1380	1540

the contents of 10-foot and 12-foot logs as follows:

Volume of 14-inch 10-foot log	80 board feet
Volume of 14-inch 12-foot log	100 board feet
Total	180 board feet
Volume of 14-inch 11-foot log	90 board feet

Making allowances for any defects and subtracting this from the gross volume will give the net measure. Woodland owners can allow for defects most easily by estimating the part of the log which will be lost because of the defect. For example, assume that a 14-inch 12-foot log is estimated to be one-fifth defective, the net contents can be determined as follows:

Gross volume of 14-inch 12-foot log	100 board feet
Less ⅕ of 100	20 board feet
Net volume	80 board feet

Piling and Seasoning Lumber

Native Nebraska lumber is good lumber if properly dried. The important thing to keep in mind in air-drying lumber is to pile it carefully to avoid warping, to allow for free circulation of air, and to prevent undue damage by weather.

An expensive permanent foundation is not necessary for the average farmer who will have at most only a few hundred pieces of lumber to pile. Piers the width of the pile and sufficient in number to take care of the lumber length should be placed 2 to 4 feet apart. (For piling cottonwood and elm which ordinarily warp readily, supports should be placed 2 feet apart.) Piers made with cement blocks or even short sections of logs or heavy timbers will answer the purpose. They should be high enough to hold the lumber a foot or so above the ground.

A common practice is to slope the foundation about one inch per foot of length from the front to the rear of the pile. Then in piling the lumber each successive layer is advanced slightly at the front so as to give a slight overhang which protects the forward end somewhat from rain. Good results can be obtained, however, with level foundations if the lumber is carefully piled and roofed to keep it dry, or piled in an outbuilding with a good roof.

In piling the lumber, ample space must be left for circulation of air. One method is to build up tiers, separated by flues or openings 2 or 3 inches wide in such a manner that the various lengths are supported firmly and the flues or openings are unobstructed from top to bottom. Tier width approximates 12 inches so that each layer in a tier may be formed of two 6-inch boards or an 8-inch and a 4-inch, or a single 10-inch

or 12-inch board. Each layer must be of uniform thickness. It sometimes happens that 2x4's are crooked when they come from the saw. These can be piled on edge near the bottom of the pile and they will tend to straighten out in the seasoning process due to the weight of lumber above them.

The method of "sticking" or separating the layers should be done properly. Seasoned 1x2 or 1x3-inch pieces make good stickers. These should be placed between each layer and each sticker should be directly above the one below and each tier of stickers should be directly over a support in the foundation. Stickers out of line may cause warped lumber. There should be always a tier of stickers at each end of the pile.

When the pile is completed it should be protected from exposure to sun and rain. A double layer of low-grade boards or strips of galvanized roofing laid over the top and extending a couple of feet beyond the front and rear will be satisfactory. They must be securely fastened in place.

The time required to season lumber will vary with the species, size of timbers, and general weather conditions. Two or three months should be sufficient for seasoning during summer, while a considerable longer period will be required if the stock is cut during the fall or winter.

Sources of Additional Information

The following bulletins may be obtained from your county agent or purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C.

Farmers Bulletins:

1210, "Measuring and Marketing Farm Timber"
1459, "Selling Black Walnut Timber"
1907, "Equipment and Methods for Harvesting Farm Woodlot Products"

Distributed in furtherance of Acts of May 8 and June 30, 1914. 1-43-5M.

Practical Helps in Marketing Farm Timber

Learn to scale logs and to compute board-feet volume.

In standing timber, determine the number of logs and the size of each that can be cut from the standing trees.

Make an estimate of the amount of material for sale.

Before selling, inquire of those who have made recent sales and use their experiences as a guide.

Find out the prices offered in order to take advantage of the best market.

Obtain competition among buyers.

Consult your county agent.